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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MATHEWS, COLLINS, SHEPHERD & GOULD, PA
100 THANET CR, SUITE 306
PRINCETON, NJ 08540

EXAMINER	
FETZNER, TIFFANY A	
ART UNIT	**PAPER NUMBER**
2859	

DATE MAILED: 05/03/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/781,035	MADARASZ ET AL.	
	Examiner	Art Unit	
	Tiffany A. Fetzner	2859	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-14* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-14* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *09 February 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *02/09/2001*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The information disclosure statement (IDS) submitted on February 9th 2001 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner has considered the information disclosure statement, and the initialed IDS is attached to this office action.

Specification

2. The disclosure is objected to because of the following informalities:

A) On page 18 under equation (4.10), after "where" **delete** "a" and **insert** "α". Appropriate correction is required.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description:

A) **Figure 1** shows a "Magnetic field Gradient Coupler" component number **148** that is not referred to in the detailed description of Figure 1 [See page 2 last paragraph through page 5 paragraph 1], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

B) **Figure 1** shows a "Control & Power Supply" component number **150** that is not referred to in the detailed description of Figure 1 [See page 2 last paragraph through page 5 paragraph 1], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

C) **Figure 1** shows a "x-Gradient" component number **152** that is not referred to in the detailed description of Figure 1 [See page 2 last paragraph through page 5 paragraph 1], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

D) **Figure 1** shows a "y-Gradient" component number **154** that is not referred to in the detailed description of Figure 1 [See page 2 last paragraph through page 5 paragraph 1], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

E) **Figure 1** shows a "z-Gradient" component number **156** that is not referred to in the detailed description of Figure 1 [See page 2 last paragraph through page 5 paragraph 1], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

F) **Figure 1** shows a "Mixer" component number **144** that is not referred to in the detailed description of Figure 1 [See page 2 last paragraph through page 5 paragraph 1], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

G) **Figure 1** shows a "Acquisition" component number **124** that is not referred to in the detailed description of Figure 1 [See page 2 last paragraph through page 5 paragraph 1], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

H) **Figure 2** shows a component number **208** that is not referred to in the detailed description of Figure 2 which describes the "Feature of Interest α" [See page 22 the last four lines], nor is it referred to in any other portion of the original disclosure. In order to overcome this objection, a reference to this component should be added to the detailed description.

4. Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being

amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to because:

A) In **Figure 1** component number 106 which represents the "receive coils" is located so close to the transmit coil line, which has a component number "108" that it initially appears that applicant has given a different number to the same component. The examiner suggests placing a "106" immediately after the words "Receive Coils, and replacing the upper "106" with a "108"; **or** moving the "Transmit Coil" word down to the transmit coil line as the label may be in the wrong location.

B) The examiner notes that **Figures 1** and **2** submitted February 9th 2005 appear to be informal drawings because line quality varies, and some of the component numbers are hard to read, which indicates that the drawings do not meet the requirements for a Formal drawing submission, therefore the examiner is treating these drawings as informal, which are acceptable for examination purposes only. Due to the drawing problems however, the examiner requests that applicant submit Formal replacement drawings of Figures 1 and 2, correcting the problems noted above, which the examiner may then submit to the Official Draftsperson for Official **Formal Drawing Review**, when the applicant responds to this office action.

6. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering

of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the examiner does not accept the changes, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

8. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

9. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

10. **Claims 1-14** are rejected under **35 U.S.C. 103(a)** as being unpatentable over **Hibbard** US patent 6,249,594 B1 issued June 19th 2001, filed May 29th 1998; in further view of **Puetter et al.**, US patent 5,912,993 issued June 15th 1999, filed June 8th 1993.

11. With respect to **Claim 1**, **Hibbard,** teaches "A method for parameter estimates in magnetic resonance imaging" [See col. 1 line 30 through col. 6 line 15; col. 6 line 65 through col. 7 line 1; col. 7 lines 59-67; col. 8 lines 13-58; col. 26 lines 42-46 and the mathematics of the entire reference in general which estimates the probability conditions for many different parameters with Bayes' Theorem], "comprising the following steps: accessing magnetic resonance imaging data; [See col. 1 line 10 through col. 4 line 50 where proton density and different relaxation phenomena parameters of MRI images are accessed; and col. 20 lines 55-56 where the system is taught to be capable of receiving "interactive input" of the MRI image data **Hibbard,** also teaches "providing a magnetic resonance imaging model function;" [See col. 6 line 65 through col. 22 line 60] and the step of "using conditional probabilities based on Bayes' Theorem to resolve the magnetic imaging data with respect to a magnetic resonance imaging model." [See col. 1 line 10 through col. 12 line 10 and the entire reference in general.]

12. **Hibbard,** lacks directly stating that the parameter estimates "flow" (i.e. change) However **Puetter et al.**, teaches a "method for parameter estimates in magnetic resonance imaging" [See **Puetter et al.**, col. 1 lines 10-16] **Puetter et al.**, also teaches reconstructing MRI images by applying Bayesian image reconstruction, with the application of Bayes' Theorem. [See **Puetter et al.**, col. 1 line 29 through col. 2 line 62; col. 3 lines 4-15; col. 4 line 23 through col. 5 line 37] Additionally **Puetter et al.**, teaches that "Many Bayesian image reconstruction methods assume that the model is fixed. However recent advances in ME (I.e. Maximum Entropy) reconstruction propose varying the Bayesian model" [See **Puetter et al.**, col. 2 lines 50-62; and the variable math variables of col. 4 line 28 through col. 5 line 38]

13. It would have been obvious to one of ordinary skill in the art at the time that the invention was made that because the MRI Bayesian image reconstruction method of **Puetter et al.**, is not required to be fixed, or static, that the estimated parameters in the **Puetter et al.**, model change, vary, and "flow" dynamically as an MRI image is reconstructed. Therefore the ability to include "flow" estimated parameters, (i.e. parameters which are not a fixed value in the model) is a feature of the **Puetter et al.**,

reference. The teachings of **Puetter et al.**, can be combined with the teachings of **Hibbard,** because both references apply Bayes' Theorem to magnetic resonance imaging and the **Puetter et al.**, reference teaches that varying the Bayesian model is a modification of the fixed Bayesian models, which includes the teachings of **Hibbard.** Additionally, the examiner notes that including additional variables that change within a given mathematical model, enables a given model to be more effective, and provide more useful information because there are less assumptions made and thus less sources of error. The examiner also notes that the increased speed of computers enables new models with more varying parameters to be calculated, in the same duration of time than in the past, so simply making a model have dynamic parameters is not a novel and non-obvious improvement in and of itself.

14. With respect to **Claim 2**, **Hibbard,** teaches that "the application of Bayes' Theorem to method of maximum likelihood." [See col. 3 lines 44-54 especially col. 3 line 50; in combination with col. 6 line 65 through col. 8 line 58; and col. 16 line 63 col. 17 line 60] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claim 1,** also apply to **claim 2** and need not be reiterated.

15. With respect to **Claim 3**, **Hibbard,** teaches that "the application of Bayes' Theorem to maximum a posteriori (MAP) method." [See col. 20 lines 38-43; col. 6 line 65 through col. 7 line 11; col. 8 line 11 through col. 20 line 42] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claim 1,** also apply to **claim 3** and need not be reiterated.

16. With respect to **Claim 4**, **Hibbard,** teaches that "the step of comparing probabilities for at least two noise models and determining which noise model of the at least two noise models is better." [See the SNR, RMS noise comparison of col. 23 line 65 through col. 24 line 60 and the statistical probabilities used throughout this reference.] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claim 1,** also apply to **claim 4** and need not be reiterated.

17. With respect to **Claim 5**, **Hibbard,** teaches that "the magnetic resonance imaging data is examined to determine which noise model of the at least two noise models is better." [See the analysis and comparison or the SNR and RMS errors of the MRI image

data from col. 23 line 65 through col. 24 line 60; in combinations with the teachings that the data may be MRI data of col. 1 line 30 through col. 6 line 15; col. 6 line 65 through col. 7 line 1; col. 7 lines 59-67; col. 8 lines 13-58; col. 26 lines 42-46] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1,** and **4** also apply to **claim 5** and need not be reiterated.

18. With respect to **Claim 6**, **Hibbard,** teaches "A system for parameter estimates in magnetic resonance imaging" [See col. 1 line 30 through col. 6 line 15; col. 6 line 65 through col. 7 line 1; col. 7 lines 59-67; col. 8 lines 13-58; col. 26 lines 42-46 and the mathematics of the entire reference in general which estimates the probability conditions for many different parameters with Bayes' Theorem]. **Hibbard,** teaches "an interface for accessing magnetic resonance imaging data;" [See col. 1 line 10 through col. 4 line 50 where proton density and different relaxation phenomena parameters of MRI images are accessed; and col. 20 lines 55-56 where the system is taught to be capable of receiving "interactive input"]. **Hibbard,** also teaches a "digital processor for using conditional probabilities based on Bayes' Theorem to resolve the magnetic imaging data with respect to a magnetic resonance imaging model." [See col. 1 line 10 through col. 12 line 10 and the entire reference in general.]

19. **Hibbard,** lacks directly stating that the parameter estimates "flow" (i.e. change) However **Puetter et al.**, teaches a "method for parameter estimates in magnetic resonance imaging" [See **Puetter et al.**, col. 1 lines 10-16] **Puetter et al.**, also teaches reconstructing MRI images by applying Bayesian image reconstruction, with the application of Bayes' Theorem. [See **Puetter et al.**, col. 1 line 29 through col. 2 line 62; col. 3 lines 4-15; col. 4 line 23 through col. 5 line 37] Additionally **Puetter et al.**, teaches that "Many Bayesian image reconstruction methods assume that the model is fixed. However recent advances in ME (I.e. Maximum Entropy) reconstruction propose varying the Bayesian model" [See **Puetter et al.**, col. 2 lines 50-62; and the variable math variables of col. 4 line 28 through col. 5 line 38]

20. It would have been obvious to one of ordinary skill in the art at the time that the invention was made that because the MRI Bayesian image reconstruction method of **Puetter et al.**, is not required to be fixed, or static, that the estimated parameters in the

Puetter et al., model change, vary, and "flow" dynamically as an MRI image is reconstructed. Therefore the ability to include "flow" estimated parameters, (i.e. parameters which are not a fixed value in the model) is a feature of the **Puetter et al.**, reference. The teachings of **Puetter et al.**, can be combined with the teachings of **Hibbard,** because both references apply Bayes' Theorem to magnetic resonance imaging and the **Puetter et al.**, reference teaches that varying the Bayesian model is a modification of the fixed Bayesian models, which includes the teachings of **Hibbard.** Additionally, the examiner notes that including additional variables which change within a given mathematical model, enables a given model to be more effective, and provide more useful information because there are less assumptions made and thus less sources of error. The examiner also notes that the increased speed of computers enables new models with more varying parameters to be calculated, in the same duration of time than in the past, so simply making a model have dynamic parameters is not a novel and non-obvious improvement in and of itself.

21. With respect to **Claim 7**, **Hibbard,** teaches that "the digital processor applies Bayes' Theorem to method of maximum likelihood." [See col. 3 lines 44-54 especially col. 3 line 50; in combination with col. 6 line 65 through col. 8 line 58; and col. 16 line 63 col. 17 line 60] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1,** and **6** also apply to **claim 7** and need not be reiterated.

22. With respect to **Claim 8**, **Hibbard,** teaches that "the digital processor applies Bayes' Theorem to maximum a posteriori (MAP) method." [See col. 20 lines 38-43; col. 6 line 65 through col. 7 line 11; col. 8 line 11 through col. 20 line 42] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1,** and **6** also apply to **claim 8** and need not be reiterated.

23. With respect to **Claim 9**, **Hibbard,** teaches that "the digital processor compares probabilities for at least two noise models and determines which noise model of the at least two noise models is better." [See the SNR, RMS noise comparison of col. 23 line 65 through col. 24 line 60 and the statistical probabilities used throughout this reference.] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1,** and **6** also apply to **claim 9** and need not be reiterated.

24. With respect to **Claim 10**, **Hibbard,** teaches "the magnetic resonance imaging data is examined to determine which noise model of the at least two noise models is better." [See the analysis and comparison or the SNR and RMS errors of the MRI image data from col. 23 line 65 through col. 24 line 60; in combinations with the teachings that the data may be MRI data of col. 1 line 30 through col. 6 line 15; col. 6 line 65 through col. 7 line 1; col. 7 lines 59-67; col. 8 lines 13-58; col. 26 lines 42-46] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 6,** and **9** also apply to **claim 10** and need not be reiterated.

25. With respect to **Claim 11**, **Hibbard,** teaches "An improved magnetic resonance imaging device for parameter estimates" [See col. 1 line 30 through col. 6 line 15; col. 6 line 65 through col. 7 line 1; col. 7 lines 59-67; col. 8 lines 13-58; col. 26 lines 42-46 and the mathematics of the entire reference in general which estimates the probability conditions for many different parameters with Bayes' Theorem]. "comprises: a magnetic resonance imaging device having a digital processor; wherein the digital processor uses conditional probabilities based on Bayes' Theorem to resolve the magnetic imaging data with respect to a magnetic resonance imaging model." [See col. 1 line 10 through col. 12 line 10; col. 26 lines 42-46 and the entire reference in general, as MRI data, for MRI models of proton density and decaying relaxation phenomena are part of the scope of the **Hibbard,** reference.]

26. **Hibbard,** lacks directly stating that the parameter estimates "flow" (i.e. change) However **Puetter et al.**, teaches a "method for parameter estimates in magnetic resonance imaging" [See **Puetter et al.**, col. 1 lines 10-16] **Puetter et al.**, also teaches reconstructing MRI images by applying Bayesian image reconstruction, with the application of Bayes' Theorem. [See **Puetter et al.**, col. 1 line 29 through col. 2 line 62; col. 3 lines 4-15; col. 4 line 23 through col. 5 line 37] Additionally **Puetter et al.**, teaches that "Many Bayesian image reconstruction methods assume that the model is fixed. However recent advances in ME (I.e. Maximum Entropy) reconstruction propose varying the Bayesian model" [See **Puetter et al.**, col. 2 lines 50-62; and the variable math variables of col. 4 line 28 through col. 5 line 38]

27. It would have been obvious to one of ordinary skill in the art at the time that the invention was made that because the MRI Bayesian image reconstruction method of **Puetter et al**., is not required to be fixed, or static, that the estimated parameters in the **Puetter et al**., model change, vary, and "flow" dynamically as an MRI image is reconstructed. Therefore the ability to include "flow" estimated parameters, (i.e. parameters which are not a fixed value in the model) is a feature of the **Puetter et al**., reference. The teachings of **Puetter et al**., can be combined with the teachings of **Hibbard,** because both references apply Bayes' Theorem to magnetic resonance imaging and the **Puetter et al**., reference teaches that varying the Bayesian model is a modification of the fixed Bayesian models, which includes the teachings of **Hibbard.** Additionally, the examiner notes that including additional variables which change within a given mathematical model, enables a given model to be more effective, and provide more useful information because there are less assumptions made and thus less sources of error. The examiner also notes that the increased speed of computers enables new models with more varying parameters to be calculated, in the same duration of time than in the past, so simply making a model have dynamic parameters is not a novel and non-obvious improvement in and of itself.

28. With respect to **Claim 12**, **Hibbard,** teaches that "the digital processor applies Bayes' Theorem to method of maximum likelihood." [See col. 3 lines 44-54 especially col. 3 line 50; in combination with col. 6 line 65 through col. 8 line 58; and col. 16 line 63 col. 17 line 60] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 6**, and **11** also apply to **claim 12** and need not be reiterated.

29. With respect to **Claim 13**, **Hibbard,** teaches that "the digital processor applies Bayes' Theorem to maximum a posteriori (MAP) method." [See col. 20 lines 38-43; col. 6 line 65 through col. 7 line 11; col. 8 line 11 through col. 20 line 42] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 6**, and **11** also apply to **claim 13** and need not be reiterated.

30. With respect to **Claim 14**, **Hibbard,** teaches that "the digital processor compares probabilities for at least two noise models and determines which noise model of the at

least two noise models is better." [See the SNR, RMS noise comparison of col. 23 line 65 through col. 24 line 60 and the statistical probabilities used throughout this reference. See also the teachings that the data may be MRI data of col. 1 line 30 through col. 6 line 15; col. 6 line 65 through col. 7 line 1; col. 7 lines 59-67; col. 8 lines 13-58; col. 26 lines 42-46]] The same reasons for rejection, obviousness, and motivation to combine, that apply to **claims 1, 6**, and **11** also apply to **claim 14** and need not be reiterated.

Examiner Comment

31. The examiner notes that applicant's specification teaches many aspects not currently set forth in applicant's claims, which are different from the prior art of record. The examiner suggests applicant consider mentioning the teachings of page 8 lines 7-19 where the parameters of blood flow: velocity, acceleration, turbulence, and phase shifts due to flow gradients "across a vessel" (i.e. page 6 line 4) are taught, in combination with the "dynamic Model functions" of in vivo measurements on page 8, in the independent claims, to clarify that applicant's invention is more than just an estimate of "flow" (i.e. changing, varying) parameters in an MRI form of Bayes Theorem, because more than one parameter is changing, and the system to which the method is applied is not static or fixed, or motion-less. The seemingly inventive aspect of 'obtaining / acquiring in vivo multi-varying, dynamic, motion-intentional parameterized active (moving / changing / flowing) image data components that are non-static, as the patient is being imaged, (i.e. blood flow: velocity, acceleration, turbulence, and phase shifts due to flow gradients "across a vessel") is missing from applicant's claims.

Prior Art of Record

32. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

A) G. Larry **Bretthorst**, article "Bayesian Analysis. III. *, Applications to NMR Signal Detection, Model Selection, and Parameter Estimation *", Journal of Magnetic Resonance, Vol. 88, pp. 571-595, 1990. [**Applies to all claims** but lacks the actual hardware used in an MRI system including a digital signal processor. **The nonstationary frequencies of page 576 suggest a "flow estimation of parameters"**

resolved by Bayes' theorem. Since the entire reference is the application of **Bayes' theorem** to NMR / MRI.]

B) Puetter et al., US patent 6,353,688 B1 issued March 2nd 2002; filed June 14th 1999. CIP of the Applied **Puetter et al.,** US patent 5,912,993 above.

Conclusion

33. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tiffany Fetzner whose telephone number is: (571) 272-2241. The examiner can normally be reached on Monday-Thursday from 7:00am to 4:30pm., and on alternate Friday's from 7:00am to 3:30pm.

34. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Diego Gutierrez, can be reached at (571) 272-2245. The **only official fax phone number** for the organization where this application or proceeding is assigned is **(703) 872-9306**.

Tiffany A. Fetzner
TAF
April 29, 2005

Diego Gutierrez
Supervisory Patent Examiner
Technology Center 2800